APPENDIX A

Wildlife Specialist Report

Lake of the Woods Late-Successional Reserve Project

USDA-Forest Service
Winema National Forest
Klamath Ranger District

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Wildlife Resource Area

Introduction

Numerous species of wildlife potentially use the project areas, including threatened, endangered, sensitive (TES), and management indicator species (MIS). See Attachment A for a list of species, habitat associations, and potential for use of the areas. The project vicinity is on the Klamath Ranger District, on the east side of the Cascade Range, west of Klamath Lake.

Recreation use began at Lake of the Woods in the early 1900's when the Forest Service took over management of the area. As access improved, recreation use increased. Today, recreational facilities at the Lake of the Woods includes two Forest Service campgrounds, five Day Use areas, three organizational camps, Lake of the Woods Resort and 218 recreation residences.

As part of the NWFP (USFS 1994), the Lake of the Woods area was included as part of Late Successional Reserve (LSR) R0227 to provide late successional habitats for spotted owls and other associated species. This LSR is about 101,506 acres, with 48% on the Winema and 52% on the Rogue National Forest.

However, current recreational use and recreation residences make the Lake of the Woods poor habitat for late-successional species. This is because the existing recreational use has reduced the ability to manage for snags and coarse woody debris typical of late-successional forest. Snag levels are not maintained at high levels in and around the recreation area because snags are routinely removed to protect public health and safety.

There are other areas on the District with quality old growth habitat and less human use that could be substituted for the Lake of the Woods. The Cold Springs area lies to the north, adjacent to the Sky Lakes Wilderness. Burton Butte lies to the south, on the Forest Boundary and adjacent to the Rogue National Forest. The Little Aspen Butte area lies to the southeast, adjacent to the Mountain Lakes Wilderness. This proposal would change management direction for two of the areas (Lake of the Woods and one of the alternate areas).

This report will address the potential effects of changes in management direction for each of the four areas.

Field Surveys/Resource Contacts

The idea of substituting allocations was presented to the Regional Ecosystem Office (REO) in fall 2003. A summary of LSR/Recreation Issues was prepared for this presentation that outlined habitat conditions and adjacent land management for each of the areas. Additional information was provided by Don Hoffheins (BLM Klamath Falls Resource Area) about adjacent BLM land management. Information on spotted owl nest status was provided by Jennifer Sanborn, Zone Wildlife Biologist. Additional information on critical habitat on the Winema, as well as connectivity information was provided by Doug Laye (FWS Biologist, Klamath Falls). No specific field reviews were done for this project. Analysis was based on information available from the Forest and GIS vegetation and spotted owl coverages.

Forest Plan Direction/Other Direction

The Winema Forest Plan (LRMP) was approved in 1990 and includes management direction for each of the four areas. In 1994, the Northwest Forest Plan amended land allocations on Forests within the range of the northern spotted owl, including the Winema. Four of the land allocations discussed in this analysis include Congressionally Reserved Areas, Late Successional Reserves, Riparian Reserves and Matrix. There are no Congressionally Reserved Areas within the four areas analyzed, but there are two Wilderness Areas that are adjacent to two of the areas.

Late Successional Reserves, in combination with the other allocations and standards and guidelines, will maintain a functional, interactive, late-successional and old-growth forest ecosystem. They are designed to serve as habitat for late-successional and old-growth related species including the northern spotted owl. LSRs were established through a range of habitat types and elevation zones within the owls range. A primary reason was to try to ensure that negative influences in one portion of the range or one type of habitat would not have a negative impact on the entire population. It is unlikely that any single factor is primarily responsible for population declines and by providing the full range of environment heterogeneity within the LSRs, there is reason to believe that owl populations may vary in positive and negative ways across their range (NWFP FEIS, pg 3&4-232).

Riparian Reserves help maintain and restore riparian structures and functions, benefit fish and riparian-dependent non-fish species, enhance habitat conservation for organisms dependent on the transition zone between the upslope and riparian areas, improve travel and dispersal corridors for terrestrial animals and plants, and provide for greater connectivity of late-successional forest habitat.

Matrix is the area in which most timber harvest and silvicultural activities will be conducted. However, the matrix does contain inclusions of non-forested areas as well as forested areas that may be technically unsuited for timber production.

Table 1. Management Direction and acres*

LRMP/NWFP	MA Descr	LOW	Cold Springs	Burton Butte	Little Aspen
02- LSR	Dev. Recr.	844	0	0	0
02- LSR/Rip	Dev. Recr.		0	0	0
03A- Matrix	Scenery		0	245	0
03B- Matrix	Scenery		861	24	0
03C- Matrix	Scenery		146	877	0
12- Matrix	Timber Prod		1,596	674	2,207
18-Matrix	Riparian Reserve		242	0	28
18 - LSR	Riparian Reserve	1,228			
Total		2,072	2,846	1,820	2,235

* does not include inclusions of areas less than 10 acres

Affected Environment

This section will discuss the existing conditions and habitat for the wildlife resource. First, an overview of the existing management and human use in each area is presented. Then an analysis of LSR habitat components is provided. This is followed by a description of habitat for spotted owls and bald eagles. A list of other TES species and MIS and habitat associations is found in Attachment A.

Existing Management and Human Use

Lake of the Woods

Lake of the Woods is designated for developed recreation in the Winema Forest Plan. The NW Forest Plan adds a LSR emphasis to this. However, because of the inability to manage for snags and downed logs due to safety, recreational use and fuels issues, the area has limited suitability to be managed as a LSR. In addition, over half of the acres are lake, and do not provide any LSR habitat.

This area is a highly developed recreation area. Developments include recreation residences, organizational camps, Forest Service campgrounds and a resort. Additionally, there are groomed snowmobile trails, and marked cross-country ski trails in the winter.

Cold Springs

About 56% of this area was designated for timber production, 35% for scenery management, with the remaining 9% in riparian management areas. The NW Forest Plan allocated this whole area to Matrix and Riparian Reserve.

Cold Springs basin lies in a cold air drainage, and has several meadows and a few shallow ponds. This area is surrounded by NFS lands on all sides. The Cold Springs area lies immediately adjacent to the Sky Lakes Wilderness area and is just west of Pelican Butte roadless area. The main development in the area is road 3651, which accesses the Cold Spring trailhead. In the winter the road is used as a groomed snowmobile trail.

Burton Butte

About 63% of this area was designated for scenery management, with the remaining 37% allocated to timber production. The NWFP allocated this area to matrix.

This area lies adjacent to the Forest Boundary and is bordered by the Rogue River National Forest to the west (managed as LSR), BLM to the south (BLM land includes the Pederson Springs Owl Core Area, Hoffheins 2/14/04), and private lands on the south, east and north. Development on these adjacent private lands includes 147 acres of housing, another 134 acres that could be developed, and about 2,500 acres of commercial forest land. US Timber lands have been heavily managed for timber production.

Little Aspen

About 99% of this area was designated for Timber Production, with the remaining 1% in Riparian Reserve management areas. The NWFP allocated this area to matrix. This area lies adjacent to the Mountain Lakes Wilderness area, matrix lands to the south and private land, including commercial forest, to the east and west. US Timber lands have been heavily managed for timber production. LSR 228 lies to the west of this area and is adjacent for about ¾ mile of the perimeter.

Late Successional Reserves

Four major structural attributes of old-growth Douglas-fir forests are live old-growth trees, standing dead trees (snags), fallen trees or logs on the forest floor, and logs in streams. Additional important elements typically include multiple canopy layers, smaller understory trees, canopy gaps and patchy understory (NWFP ROD at B2, USFS 1994).

Many of the species analyzed for this project are associated with late successional reserves (see Attachment A). These include Pacific fringe-tailed bat, Pacific pallid bat, Pacific fisher, great gray owl, northern goshawk, pileated woodpecker, American marten, black-backed woodpecker, brown creeper, flammulated owl, hermit thrush, olive-sided flycatcher, Williamson's sapsucker, and hermit warbler.

The following tables show the vegetation communities, conifer canopy density and conifer sizes in each of the four areas.

Table 2. Comparison of acres of vegetation communities between Areas

Vegetation community	Lake of the Woods	Cold Springs	Burton Butte	Little Aspen
Brush	8	2	15	109
Grass	0	147	201	75
Marsh/meadow	190	63	0	12
High elev. Lodgepole pine	8	1,010	41	385
Ponderosa pine – mixed conifer	0	15	19	9
Red fir	432	1,075	425	915
White fir	181	346	969	585
Young conifer	0	199	150	149
Total acres conifer	621	2,645	1,604	2,043

Table 3. Comparison of acres in conifer canopy density categories between Areas

Canopy density	Lake of the Woods	Cold Springs	Burton Butte	Little Aspen
High density (>55%)	461	1,651	1,026	1,107
Medium density (40-54%)	144	412	234	396
Low density (10-39%)	16	614	316	531
Non-forest (0-10%)	1,457	179	245	205

Table 4. Comparison of acres in conifer size categories between Areas

Conifer size	Lake of the Woods	Cold Springs	Burton Butte	Little Aspen
Large multistory (32"+)	37	31	72	206
Medium multistory (21-31.9")	544	2,231	1,139	1,523
Small multistory (10-20.9")	39	225	244	176
Seed-sapling-pole (0-9.9")	0	199	150	149

Lake of the Woods

The area surrounding Lake of the Woods is late-successional Douglas-fir with a dense Shasta red fir and white fir understory. The stand structure is typically two-storied with a fairly dense canopy closure. This area has no areas of young conifer.

Cold Springs

This area is predominately lodgepole pine and red fir overstory with a smaller acreage of white fir and young conifer. The stands typically have a dense canopy closure and are medium sized trees in multistoried stands. This area has about 200 acres of young conifer as a result of harvest in the 1980's and 1990's.

Burton Butte

This area is primarily white fir and red fir overstory, with areas of lodgepole pine and young conifer stands. The stands typically have a dense canopy closure and are medium sized trees in multistoried stands. This area has about 150 acres of young conifer as a result of harvest in the 1970's and 1980's.

Little Aspen

This area is predominately red fir and white fir overstory with areas of lodgepole pine and young conifers. The stands typically have a dense canopy closure and are medium-sized trees in multi-storied stands. This area has about 150 acres of young conifer as a result of harvest in the 1980's and 1990's.

Summary

Late successional stands include all stands dominated by medium or large trees where canopy closure is >40%; and stands dominated by small trees, but with a remnant overstory of medium or large trees and a canopy closure greater than 55% (USFS 1997). In addition, late successional forest includes the presence of large trees greater than 20"

in diameter. Based on these criteria, Cold Springs has the most acres of late-successional, multi-storied stands over 21" diameter. While information on snags and coarse woody debris is not available, it could be assumed that levels would be highest here, as road access to firewood cutters is more limited than in the other areas.

Northern spotted owls

Important structural attributes of the late-successional and old-growth forests utilized as spotted owl habitat are live old-growth trees, snags and logs. Additional important elements typically include multiple canopy layers, canopy gaps, and patchy understory (ROD 1994). Structural attributes were previously discussed in the Late Successional Reserves section.

Nesting, roosting and foraging (NRF) habitat has been mapped on the Forest using aerial photos to identify mixed conifer with high canopy closure. Nesting habitat includes 60-80% canopy cover, is multi-storied and has trees larger than 30" diameter (USFWS 1991). Generally, areas with at least 50% of the area with more than 40% canopy cover and trees larger than 11" dbh were mapped as dispersal habitat (USDI FWS 1991). Most previously harvested areas (shelterwood and seedtree) were mapped as dispersal habitat.

The four areas vary in their ability to provide habitat for northern spotted owls. Table 5 shows a comparison of some of the habitat variables. Another variable, which is not included in the table, are existing and potential future human activities and development in and adjacent to each of the areas. This information is included in the previous area descriptions (under Existing Management and Human Use).

Table 5. Northern spotted owl habitat comparison (USFS Executive Summary, n.d.)

Area	Total acres	Elevation range	NRF acres	Dispersal acres	Unsuitable acres	Critical habitat acres	Occupied
LOW	2,005	4,955 to 5,100	292	289	1,425 (1,227 lake)	None	No
Cold Springs	2,846	5,500 to 6,500	1,083	450	1,323	Entire (OR8)	Yes
Burton Butte	1,806	5,500 to 6,100	1,137*	23*	647	1,745 (OR37)	Yes
Little Aspen	2,231	6,000 to 7,200	1,313	203	715	None	Historic

* reduce nesting/r/f by 77 acres and increase dispersal by 77 acres if Spencer TS awarded

An increase in edge habitats may increase the potential for competition with barred owls and predation by great-horned owls (USFS 1992). Dispersing owls have a greater chance of survival if forest conditions between designated areas are suitable for foraging and roosting. Home range size has been determined to be around 3,000 acres for the Oregon Cascades and about 2,229 acres in the Klamath Province (USFS 1992). Other research suggests that home range size may be larger, with an average of 3,340 acres (Paton et al, 1990).

The FWS has designated critical habitat for the northern spotted owl (1992), based on the presence of primary constituent elements (nesting/roosting/foraging). Critical habitat areas were established in a network to allow adequate habitat connectivity between spotted owl subpopulations. Two of the project areas, Cold Spring and Burton Butte are in critical habitat.

When the NWFP established LSRs in 1994, the same concepts were used to distribute LSRs.

Spotted owl activity centers are well-distributed across the Klamath Ranger District and occur in multi-storied white fir and Shasta red fir forests classified as both mid and late seral. Analysis of known nests indicates that spotted owls most frequently select large Douglas-fir, ponderosa pine and sugar pine even though they are in a true fir dominated landscape (USFS 1997). All three of the alternatives have more than twice the amount (1,400 to 1,500 acres) of red fir and white fir vegetation communities than LOW does (613 acres). Additional analysis indicates that owls use forests between 4,500 to 6,000 feet elevation with 56-85% canopy cover, snags and forests with good connectivity (USFS 1997).

American bald eagle

The Lake of the Woods bald eagle site (No. 475) is on the ridge above the western side of the tract. Applicable seasonal restrictions and buffer zones are applied to cabins closest to the bald eagle nest through the permit process. The bald eagle nest management plan includes vegetation management that would reduce firs and leave pines.

There are no bald eagle nest sites associated with the other three areas.

Environmental Effects

This proposal would change land management designation, but would not authorize any ground-disturbing activities. Any ground disturbing activities occurring later, as a result of changes in management direction, would be subject to further environmental analysis. Information from Forest Monitoring Reports shows that in the last several years there has been little difference in silvicultural prescriptions between matrix and late successional reserves. No trees over 20” dbh are removed, and the current Forest emphasis is on thinning in LSR.

<u>Features common to all alternatives</u>

Management of riparian habitats would be similar under all alternatives and differences between alternatives are not expected. Those species that are associated with riparian habitats (such as fish and Oregon spotted frog) would not see a change in habitat management as a result of changes in land management allocation.

Management direction for bald eagles and sensitive species would also not be affected by changes in management direction. The bald eagle nest location near Lake of the Woods is managed under an approved Nest Management Plan, which would be in place whether the area was managed for developed recreation, or LSR. Sensitive species direction in the Winema Forest Plan is forest-wide direction and would not be affected by changes in land management allocation.

The Forest Plan includes direction for management around rock habitats (talus, cliffs, caves etc) that protects a 200 foot zone adjacent to rock habitats. This would be in place regardless of land management allocation, and species associated with these habitats would not be affected by a change in land management allocation.

Meadow habitats (such as those in Cold Springs) are also managed under forest-wide direction and would not be affected by a change in land management allocation.

Under LSR management direction, timber harvest would only be allowed when it is beneficial to the creation of late-successional forest conditions (NWFP S&G's C-12). This could include silvicultural activities to reduce risk of wildfire in younger stands in LSR. Activities in older stands may be appropriate under certain limited conditions. Construction of new roads is discouraged, but if necessary, would be kept to a minimum, routed to have the least impact and designed to minimize adverse impacts. Fuelwood gathering would only be allowed in very specific cases. New developments are generally discouraged. Dispersed recreational uses are generally consistent with the objectives.

The focus of recent vegetation treatments on the Winema has changed to thinning, selection and salvage harvest for ecosystem restoration and to reduce risk of wildfire and insects. No regeneration harvests have occurred since 1996 and no overstory removal since 1994 (USFS 2001). These projects were designed to sustain old growth conditions, and to protect spotted owl connectivity between LSRs and Crater National Park. Regional amendments (7 and 8) to the Eastside Forest Plans, has eliminated harvest of trees over 21" diameter. Based on review of the last few years of projects, LSR may be more likely to be treated than matrix areas, because of increased funding for management of habitat for threatened and endangered species.

Alternative A: No Action

There are no known spotted owl nests around LOW, but it is surrounded by designated critical habitat (OR-37) and is dominated by NRF habitat. This alternative would provide the lowest-quality LSR habitat of the four alternatives. Over half of the area is in lake, and the remainder is heavily developed for recreation. Human activity, noise (cars and boats in summer, snowmobiles in winter) and light levels, and removal of standing dead trees and downed logs all reduce habitat effectiveness for spotted owls and most associated species.

Alternative 1, Cold Spring

This alternative would change management direction for Cold Spring. Currently 91% of the area is open for timber management and fuelwood gathering; under this alternative timber harvest would only occur to improve LSR conditions. Fuelwood gathering would only be allowed in specific areas under certain conditions.

The main development in the area is road 3651, which accesses the Cold Spring trailhead. In the winter the road is used as a groomed snowmobile trail. Big Meadows snowplay area is immediately adjacent to this area.

This upper end of this area is a little higher in elevation and is subject to longer snow cover and colder temperatures. This may make this area less productive for owls (FWS 5/19/04). Productivity information is limited but available data suggests low productivity (see Attachment B). There are two known nest territories adjacent to this area, both of which were occupied by non-nesting pairs in 2003.

There is a large amount of NRF (1,083 acres) and it is well connected to habitat in wilderness, existing LSR and administratively withdrawn areas; and the entire area is within designated critical habitat (OR-8). See Attachment B for information on OR-8.

Under this alternative, 844 acres of LSR around the edge of Lake of the Woods would go to Administratively Withdrawn/Matrix, with a developed recreation emphasis. It is unlikely that there would be any removal of large, live overstory trees, but some smaller understory trees could be removed. Standing dead trees would continue to be removed as safety or fuels hazards.

Alternative 2, Burton Butte

This alternative would change management direction for Burton Butte. Currently 100% of the area is open for timber management and fuelwood gathering; under this alternative timber harvest would only occur to improve LSR conditions. Fuelwood gathering would only be allowed in specific areas under certain conditions.

This area is in designated critical habitat (OR-37) and is adjacent to LSR on the Rogue National Forest. See Attachment B for information on OR-37. Dispersal between current LSR and Burton Butte may be compromised by major road systems and sparsely mixed conifer forest on private land and Forest Service administered land. If this piece was allocated LSR, it could enhance BLM's management of the District Designated Reserve (DDR) in the Pederson Springs area to the south. Spotted owls banded in these two areas have been documented to move between these two areas.

In 2004, a single male barred owl was located in the Burton Butte area. Nearby, a barred owl pair was discovered in the Pederson Springs area on land administrated by Bureau of Land Management.[1]

[1] The barred owl pair may actually be one spotted owl paired with one barred.

Under this alternative, 844 acres of LSR around the edge of Lake of the Woods would go to Administratively Withdrawn/Matrix, with a developed recreation emphasis. It is unlikely that there would be any removal of large, live overstory trees, but some smaller understory trees could be removed. Standing dead trees and downed logs would continue to be removed as safety and fuels hazards.

Alternative 3, Little Aspen

This alternative would change management direction for Little Aspen. Currently 99% of the area is open for timber management and fuelwood gathering; under this alternative timber harvest would only occur to improve LSR conditions. Fuelwood gathering would only be allowed in specific areas under certain conditions.

This area is adjacent to existing LSR R0228 and the Mountain Lakes Wilderness. LSR 228 may have been added as a "stepping stone" in a developed landscape (FWS 5/19/04). Much of the higher elevation in the Wilderness is open and rocky and not habitat for spotted owls. The lower elevations around the edge of the wilderness are NRF and connectivity is good to the north. Connectivity to NRF is limited in all other directions.

Under this alternative, 844 acres of LSR around the edge of Lake of the Woods would go to Administratively Withdrawn/Matrix, with a developed recreation emphasis. It is unlikely that there would be any removal of large, live overstory trees, but some smaller understory trees could be removed. Standing dead trees and downed logs would continue to be removed as safety and fuel hazards.

Cumulative Effects

The Winema is currently working on reissuance of 218 modified recreational residence permits at the LOW. This action was determined to be consistent or could be made consistent with management direction (11/7/03). This would occur under all alternatives and irregardless of management direction changes to LOW. Permit modifications specifically addressing wildlife issues include seasonal restrictions around raptor nests, reductions of disturbance to bat roosting habitat, and ability to leave tree boles on the ground to meet down wood standards.

The Great Meadows snow play area is adjacent to the LOW area. In Cold Spring, the road to the trailhead is used as a groomed snowmobile trail, as well as the road that heads up to Pelican Butte. Big Meadows snowplay area is immediately adjacent to this area. LSR management direction has no influence on winter snowmobile use, and there would be no change with a change in management direction. Winter use/recreation has not been shown to have an effect on spotted owls and is not considered further for cumulative effects.

No Action

This area is a highly developed recreation area. Developments include recreation residences, organizational camps, Forest Service campgrounds and a resort. The recreational residence tracts are currently undergoing through the permit re-issuance process. Other developments, such as the Lake of the Woods Resort, would continue to be managed through the permit process.

Alternative 1

The Cold Springs area lies immediately adjacent to the Sky Lakes Wilderness area and is just west of Pelican Butte roadless area. The main development in the area is road 3651, which accesses the Cold Spring trailhead. There are no foreseeable actions planned in this area.

If LOW is removed from LSR, a Vegetation Management Plan may be prepared to manage the forest around the lake. There could be proposals for increased recreational development as well (Lake of the Woods resort). Any new proposals would still have to be consistent with the Aquatic Conservation Strategy in the Riparian Reserve. The Riparian Reserve around Lake of the Woods in 300 feet.

Alternative 2

This area lies adjacent to the Forest Boundary and is bordered by the Rogue River National Forest to the west (managed as LSR with underlying watershed and partial retention direction), BLM to the south (BLM land includes the Pederson Springs Owl Core Area), and private lands on the south, east and north. Development on these adjacent private lands includes 147 acres of housing, another 134 acres that could be developed, and about 2,500 acres of commercial forest land. These commercial forest lands have been heavily managed in the past.

The Spencer timber sale was offered in 1999, but has not been awarded. If the sale is awarded, there would be three commercial thinning units within the Burton Butte area. These units total 104 acres, and would convert 77 acres from NRF habitat to dispersal habitat. There is also proposed development of homesites on private land to the north (Jen Weld). The past activities and potential development on adjacent private lands decrease habitat quality, increase disturbance and reduce connectivity of this area.

If LOW is removed from LSR, a Vegetation Management Plan may be prepared to manage the forest around the lake. There could be proposals for increased recreational development as well (Lake of the Woods resort). Any new proposals would be subject to further environmental review and would still have to follow the Aquatic Strategy if within 300 feet of the shoreline.

Alternative 3

This area lies adjacent to the Mountain Lakes Wilderness area, matrix lands to the south and private land, including commercial forest, to the east and west. These commercial forest lands have been heavily managed in the past. LSR 228 lies to the west of this area and is adjacent for about ¾ mile. There has been past prescribed burning on Forest lands to the south. There are no foreseeable actions planned in this area.

If LOW is removed from LSR, a Vegetation Management Plan may be prepared to manage the forest around the lake. There could be proposals for increased recreational development as well (Lake of the Woods resort). Any new proposals would be subject to further environmental review and would still have to follow the Aquatic Strategy if within 300 feet of the shoreline.

Comparison of alternatives for connectivity

The following table shows a comparison between the alternatives and their effect on LSR and spotted owl habitat. Ability to provide LSR habitat is based on a combination of factors shown in Tables 2-4. The spotted owl comparison also factors in occupancy and connectivity to adjacent habitats.

Connectivity may be addressed through a couple of different approaches. One is to assume that connectivity is better if additional protected area is close to already protected areas; making larger areas of functional habitat. The other approach is to provide areas of habitat that "connect" the entire range, or "stepping stones" across large areas of non NRF habitat. The Northwest Forest Plan distributed the LSRs and protection for un-mapped LSRs (owl areas) with the "stepping stone" approach (ESWR 2004) and to address the concept of "well-distributed" in the FS Planning Regulations (NWFP FEIS, Vol 1, pg 3&4-121).

Table 6. Comparison of the alternatives for LSR and spotted owl habitat.

Alternative	LSR and habitat for associated species	Spotted owl habitat
No Action, Lake of the Woods	This alternative would maintain the 844 acres of late-successional habitat in LSR around LOW. However, it is not functional habitat because of lack of snags and coarse, woody debris	This area has good connectivity with adjacent NRF habitat, but is not functional because of factors identified previously. This alternative is the least beneficial for spotted owls.
Alt 1, Cold Springs	This alternative would result in the largest increase in acreage of late-successional habitats going into LSR	This area has two occupied nests nearby, is adjacent to existing LSR and wilderness and is designated critical habitat. Connectivity to adjacent NRF is good, although some of the acreage may be too high in elevation to be productive habitat and the potential for development around the perimeter is low because it is all NFS lands. This alternative would be most beneficial for spotted owl habitat under the first approach to connectivity.
Alt 2, Burton Butte	This alternative would result in a smaller increase in acreage of late-successional habitats going into LSR but it is lower elevation and may be more productive habitat for spotted owls.	This area has two occupied nests, is adjacent to LSR (Rogue) and is designated critical habitat. However, connectivity to adjacent NRF is limited to the north, east and south by open areas and development on adjacent private lands. However, there is documented movement of owls between this area and the BLM Pederson Springs Owl Core Area to the south. This alternative may be most beneficial under the second approach to connectivity.
Alt 3, Little Aspen	This alternative would result in the second largest increase in acreage of late-successional habitats going into LSR.	This area has one adjacent nest site that has been vacant for several years but became active again in 2003. It is not critical habitat, but is adjacent to a small LSR (R0228) and Wilderness. Connectivity to adjacent NRF is most limited under this alternative due to the presence of private lands to the east, south and west. This alternative would rank second for benefiting spotted owl habitat under both approaches to connectivity.

Because there are two approaches to managing for connectivity, there are two alternatives that best meet these approaches. Under the first approach, which addresses adjacency to NRF habitat, Cold Springs is the preferred alternative. This would add 2,846 acres to LSR 227, which is the largest LSR on the Winema.

Under the second approach, which addresses "stepping stones" of habitat connecting larger areas, the Burton Butte area is the preferred alternative. This would add 1,806 acres of LSR to critical habitat area OR-37.

Consistency with Forest Plan

On the landscape scale, any of the alternatives comprise a very small part (2 or 3%) of the 101,600 acres of LSR 227. LSR 227 comprises only 1% of the area designated as LSRs in the 1994 ROD. Any of the action alternatives would improve the amount of functional LSR habitat and the change would have no additional effects beyond those considered during development and analyses for the NWFP.

Analysis for the NWFP (FEIS pgs 177-190) found that the adopted system of late successional reserves, along with riparian protection, and retention of green trees, snags and coarse woody debris would be favorable to late successional forest associated species. The current condition of the LSR network is nearly identical to its condition when the NWFP was adopted and the small losses of NRF habitat likely have not altered the ability of the LSRs to provide the dispersal habitat connection and reproductive capability that existed when the NWFP was adopted. Most all of the changes in the LSRs have enhances the sustainability of the NRF habitat and maintained the nesting structures which spotted owls use (FWS 12/2001).

For the foreseeable future, Matrix lands will support large amounts of NRF providing substantial connectivity between LSRs.

Nesting/roosting/foraging habitat is relatively highly connected at the landscape level on the Klamath Ranger District (USFS 1997). Selection of any of the alternatives will maintain this connectivity at the landscape level, but some are better than others, as described in the Comparison of Alternatives section.

Determinations

Effects determinations and rationale for threatened, endangered and sensitive species are shown in the table below.

Table 7.

Common Name	Determination	Rationale
T&E		
Bald eagle *Haliaeetus leucocephalus*	No effect	Management of the nest at LOW is under an approved Nest Management Plan under all alternatives
Northern spotted owl *Strix occidentalis caurina*	Beneficial Effect for Alts 1, 2 and 3. No effect for No Action.	All three action alternatives would improve management for habitat of spotted owl habitat. The No Action alternative would retain LOW as LSR even thought it is the least functional of the four alternatives. However, management in the area would still be required to consider and manage for spotted owls.
Yellow-billed cuckoo *Coccyzus americanus*	No effect	Riparian habitats would be managed similarly under all alternatives.
North American lynx *Lynx canadensis*	No effect	Not expected to be present; not within the current range.
Mardon skipper butterfly *Polites mardon*	No effect	Nearest known site is about 30 miles north of LOW.
Shortnose sucker *Chasmistes brevirostris* Lost River sucker *Deltistes luxatus* Bull trout *Salvelinus confluentus*	No effect	None of these species are present in any of the four areas.
Sensitive		
Peregrine falcon *Falco peregrinus anatum*	No impact	Cliff and rocky habitats would be managed similarly under all alternatives.
Yellow rail *Leucosticte arctoa atrata*	No impact	No habitat

Common Name	Determination	Rationale
Horned grebe *Podiceps auritus*	No impact	No effect on potential for migratory use on Lake of the Woods
Red-necked grebe *Podiceps grisegena*	No impact	No effect on potential for migratory use on Lake of the Woods
Bufflehead *Bucephala albeola*	No impact	No effect on potential for migratory use on Lake of the Woods
Least bittern *Ixobrychus exillis*	No impact	No habitat
Harlequin duck *Histrionicus histrionicus*	No impact	No habitat in LOW and no documented nesting in any of the areas. Riparian habitats would be managed similarly under all alternatives.
Tri-colored blackbird *Agelaius tricolor*	No impact	No habitat
Pacific Fringe-tailed bat *Myotis thysanodes vespertinus* And Pacific Pallid bat *Antrozous pallidus pacificus*	Beneficial impact for Alts 1, 2 and 3. No impact for No Action.	All three action alternatives would improve management for LSR habitat. The No Action alternative would retain LOW as LSR even thought it is the least functional of the four alternatives. However, management in the area would still be required to consider and manage for spotted for these sensitive species.
California wolverine *Gulo gulo luscus*	No impact	This species is largely affected by human uses in an area. Changes in management allocation should not result in increased human activities or affect potential to provide habitat for wolverines.
Pacific fisher *Martes pennanti*	Beneficial impact for Alts 1, 2 and 3. No impact for No Action.	All three action alternatives would improve management for LSR habitat. The No Action alternative would retain LOW as LSR even thought it is the least functional of the four alternatives. However, management in the area would still be required to consider and manage for sensitive species.
Columbian (Oregon) spotted frog *Rana pretiosa*	No impact.	Riparian habitats would be managed similarly under all alternatives.
Northwestern pond turtle *Clemmys marmorata marmorata*	No impact.	No habitat
Klamath pebblesnail *Fluminicola n. sp. 1* Tall pebblesnail *Fluminicola n. sp. 2* Sinitsin Ramshorn	No impact	These are all aquatic species and riparian habitats would be managed similarly under all alternatives.

Common Name	Determination	Rationale
Vorticiflex klamathensis sisitsini		
Chance sideband *Monadenia chaceana* Crater Lake Tightcoil *Pritiloma arcticum crateris* Evening fieldslug *Deroceras hesperium*	Beneficial impact for Alts 1, 2 and 3. No impact for No Action.	These species are associated with rock, talus and moist habitats along drainages; these habitats would be managed similarly under all alternatives. Management in the area would still be required to consider and manage for these sensitive species.
Pit-Klam. Brook lamprey Goose Lake lamprey Klamath R. lamprey Pit sculpin Slender sculpin Pit roach Oregon Lakes tui chub Blue chub Klam. Largescale sucker Int. Redband trout	No impact.	The blue chub is the only species present. It is found in Lake of the Woods. Lake habitat would be unaffected by any changes in management allocation.

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Attachment A. Special Status Species for the Winema National Forest

Threatened and Endangered and Sensitive Species and MIS

This list was prepared from several sources. First, the federally listed species were taken from FWS letter 1-10-04-SP-063. The sensitive species were taken from the R6 Sensitive Species list (11/15/00). This list was updated to incorporate mollusk species as a result of a recent Decision (3/2004). This Decision modified Survey and Manage guidelines that were in the NWFP. Survey and Manage species to be added came from information provided by Shawna Bautista, R6 Regional Biologist.

Table A-1. Threatened, endangered, sensitive species and MIS

Common Name	Scientific Name	Status	Habitat	Present/affected?
T&E				
Bald eagle	*Haliaeetus leucocephalus*	T, MIS	Nests near water in large live trees	Yes, nest at LOW
Northern spotted owl	*Strix occidentalis caurina*	T, CH, MIS	Live old growth trees, snags and logs	yes
Yellow-billed cuckoo	*Coccyzus americanus*	C	Willow-cottonwood areas >25 acres	Riparian habitats would be managed similarly. No habitat at LOW.
North American lynx	*Lynx canadensis*	S, T		Not expected to be present; not within the current range.
Columbian (Oregon) spotted frog	*Rana pretiosa*	S, C	Marshy areas with permanent water	No habitat at LOW
Mardon skipper butterfly	*Polites mardon*	C	Meadows or openings dominated by *Festuca*	No habitat at LOW but historic collections from area. Nearest known site is about 30 miles north of LOW.
Shortnose sucker	*Chasmistes brevirostris*	E, PCH	Lake dwelling, spawn in tributary streams	no
Lost River sucker	*Deltistes luxatus*	E, PCH	Lake dwelling, spawn in tributary streams	no
Bull trout	*Salvelinus confluentus*	T, PCH	Cold water ecosystems	no
Sensitive				

Common Name	Scientific Name	Status	Habitat	Present/affected?
Peregrine falcon	*Falco peregrinus anatum*	S	Nest on cliff ledges	No suitable cliff habitat in any of the four areas.
Yellow rail	*Leucosticte arctoa atrata*	S	Marshes and wet meadows	No habitat
Horned grebe	*Podiceps auritus*	S	Transitory use of lake	No effect
Red-necked grebe	*Podiceps grisegena*	S	Transitory use of lake	No effect
Bufflehead	*Bucephala albeola*	S	Transitory use of lake	No effect
Least bittern	*Ixobrychus exillis*	S	Emergent vegetation in marshes	No habitat
Harlequin duck	*Histrionicus histrionicus*	S	Fast-flowing mountain streams	No habitat in LOW, no documented nesting in any of the areas.
Tri-colored blackbird	*Agelaius tricolor*	S	Sedges and grasses in marshes and croplands	No habitat
Pacific Fringe-tailed bat	*Myotis thysanodes vespertinus*	S	Large trees and snags, old buildings, tree cavities, rock outcrops	Yes, large tree and snag habitat component
Pacific Pallid bat	*Antrozous pallidus pacificus*	S	Large trees and snags, old buildings, tree cavities, rock outcrops	Yes, large tree and snag habitat component
California wolverine	*Gulo gulo luscus*	S	High elevation cirque basins on north and east aspects that have persistent snow (Sky Lakes wilderness)	No known records exist, but historically wolverine probably moved through the area.
Pacific fisher	*Martes pennanti*	S	Low to mid-elevation forest with closed canopy, late-successional forest	Yes, three fishers documented on Klamath RD in 1996.
Columbian (Oregon) spotted frog	*Rana pretiosa*	S, C	Marshy areas with permanent water	No habitat at LOW
Northwestern pond turtle	*Clemmys marmorata marmorata*	S	Warm bodies of water with aquatic vegetation	LOW too cold
Pit-Klamath Brook lamprey	*Lampetra lethophaga*	S		no
Goose Lake lamprey	*Lampetra tridentata sp.*	S		no
Klamath River lamprey	*Lampetra similiis*	S		no
Pit sculpin	*Cottus tenuis*	S		no
Slender sculpin	*Cottus tenuis*	S		no

Common Name	Scientific Name	Status	Habitat	Present/affected?
Pit roach	*Lavina symmetricus mitrulus*	S		no
Oregon Lakes tui chub	*Gila bicolor oregonensis*	S		no
Blue chub	*Gila coerulea*	S	Use rocky pools of creeks and small to large rivers and water impoundments.	Yes, unintentional stocking in LOW. No effect.
Klamath largescale sucker	*Catostomus synderi*	S		no
Interior redband trout	*Oncorhynchus mykiss ssp.*	S		no
MIS				
Northern goshawk	*Accipiter gentilis*	MIS	Mixed conifer, lodgepole, ponderosa and aspen	Yes. Historic nest more than one mile west of LOW residences. Also nests on Burton Butte and adjacent to Little Aspen
Pileated woodpecker	*Dryocopus pileatus*	MIS	Mature and old growth forest	yes
Northern three-toed woodpecker	*Picoides tridactylus*	MIS (FP)	Mixed conifers, bark beetles	No, not documented this far south*
Red-naped sapsucker	*Sphyrapicus nuchalis*	MIS (Klam)	Aspen	
Black-backed woodpecker	*Picoides arcticus*	MIS (tool/Kl)	Mature lodgepole pine	Yes, sightings have been reported in Four-mile area
Mule deer	*Odocoileus hemionus hemionus*	MIS	Shrub and edge habitats	No habitat in LOW
American marten	*Martes americana*	MIS	Late successional stands of mesic conifer stands	Yes, thought to occur across the LSR (USFS 1997)

* habitat attribute information summarized from Sanborn 2003 as referenced from "Birds of Oregon" (Marshall et al, 2003)

Landbirds

The Forest Service has an agreement with Partners in Flight to develop a strategy for achieving functioning ecosystems for landbirds. Because of the project areas location on the Cascade Mountains crest, it falls in two Bird Conservation Regions, identified by Partners in Flight (East-slope Cascades and BCRs 5 and 9). The "Birds of Conservation Concern" for these regions are shown in the following table, with habitat attributes.

Table A-2. Landbirds

Habitat attribute*	Species	Habitat present or affected?
Late successional forest	Black-backed woodpecker, brown creeper, flammulated owl, hermit thrush, olive-sided flycatcher, Williamson's sapsucker, hermit warbler	yes
Aspen	Red-naped sapsucker	No habitat.
Meadows	Sandhill crane	Yes, Big Meadow at Cold Springs
Shallow wetlands	American avocet, Caspian tern, short-billed dogwatches, tri-colored blackbirds, Wilson's phalarope, yellow rail	Not present
Cliffs and rock outcrops	Black swift, peregrine falcon, prairie falcon	Not affected. No suitable cliff habitat in any of the four areas.
Sagebrush	Brewer's sparrow, loggerhead shrike, ferruginous hawk, golden eagle	No habitat
Open fields, short-grass or mixed prairie	Horned lark, long-billed curlew, golden eagle, Swainson's hawk, tri-colored blackbirds, vesper sparrow,	No habitat
Open oak and ponderosa pine forest	Lewis' woodpecker, white-headed woodpecker	Little to no habitat in any of the four areas
Forest mosaic	Northern goshawk	Present.
Wooded area with well-developed understory	Rufous hummingbird	

Survey and Manage

The Northwest Forest Plan identified Survey and Manage (S&M) species. A recent Decision (3/2004) removed the Survey and Manage Mitigation Measure Standards and Guidelines. None of the S&M species were listed, or proposed for federal listing. These species were reviewed for inclusion on the Regional Sensitive Species list and added where appropriate (see Sensitive Species in Table A-1). The official updated Sensitive Species list is to be out in late April and effective immediately for those Forests under the NWFP (S. Bautista, USFS Biologist, pers. comm.).

Table A-3. Former Survey and Manage and status after 3/2004 Decision

S&M		Distribution on Winema	Status after recent Decision
Evening fieldslug	*Deroceras hesperium*	Documented. Terrestrial, low vegetation, litter, debris and rocks.	Add to Sensitive Species list
Klamath pebblesnail*	*Fluminicola n. sp. 1*	Documented. Aquatic, areas with gravel-boulder substrate, spring influx and some flow.	Add to Sensitive Species list
Tall pebblesnail*	*Fluminicola n. sp. 2*	Suspected. Aquatic, large, undisturbed, very cold, oligotrophic springs	Add to Sensitive Species list
Chace sideband	*Monadenia chaceana*	Suspected. Terrestrial, lower reaches of major drainages, talus and rock, woody debris in moist coniferous forest	Add to Sensitive Species list
Crater Lake Tightcoil	*Pritiloma arcticum crateris*	Documented. Terrestrial, moist conifer forests and near wet areas.	Add to Sensitive Species list
Sinitsin Rams-horn*	*Vorticiflex klamathensis sisitsini*	Documented. Aquatic, large, cold springs with coarse substrate.	Add to Sensitive Species list
Great gray owl	*Strix nebulosa*	Occurs, but is not considered to be at risk in Oregon.	Not recommended for addition to Sensitive Species list
Oregon red tree vole	*Arborimus longicaudus (silvicola)*	Does not occur on the Winema	Not added for Winema
Larch Mountain salamander	*Plethodon larsellii*	Does not occur on the Winema	Not added for Winema
Siskiyou Mountains salamander	*Plethodon stormi*	Does not occur on the Winema	Not added for Winema
VanDyke's salamander	*Plethodon vandykei*	Does not occur on the Winema	Not added for Winema

*Species that had been previously removed from Survey and Manage status

Attachment B. Spotted Owl background information

Critical Habitat Units

Critical habitat unit OR-37 (which includes Burton Butte) straddles the boundary between the Western and Eastern Cascades. The unit was designated as critical habitat because of its essential nesting, roosting, foraging and dispersal habitat. Unit OR-37 provides the single most important "stepping stone" of critical habitat, which links the Oregon Cascades to the Klamath Mountains province across the South Ashland portion of the I-5 area of concern. The Service identified this as one of the areas where past harvest practices, current habitat conditions and land ownership patterns elevate the importance of maintaining areas of owl nesting habitat linking the Western/Eastern Cascades and Klamath Mountains provinces.

Since 1994, a total of 4% of NRF habitat has been removed and 4.8% has been degraded in OR-37 (degraded refers to projects designed to maintain or enhance the development of late-successional and old-growth forests to reduce the risk of loss of habitat due to fire, insects and competitive stress). The critical habitat unit is still substantially in the condition it was at the time of designation and the acres that are tallied as degraded have actually reduced the risk of habitat loss from fire and disease (FWS 12/2001).

Critical habitat unit OR-8 was designed to maintain essential nesting, roosting, and foraging habitat in the southern portion of the Eastern Cascades province. Unit OR-8 is the single unit providing the north-south connection in the southern portion of the Eastern Cascades province. Unit OR-8 connects to the Sky Lakes Wilderness/Crater Lake National Park block to the west. The creation of OR-8 will also help maintain and improve the range-wide distribution of owl nesting habitat along the eastern fringe of the subspecies range.

Since 1994, the critical habitat unit has had <1% of NRF removed and another 3.1% degraded. Like OR-37, the impacts were related to thinnings, which spread the impacts over a large area and protects the remaining NRF. Therefore it is assumed that the unit is substantially in the condition it was at the time of designation except for being less at risk from fire and disease (USFWS 2001).

Comparison of Alternatives

In the Executive summary (n.d.) there were five factors considered in recommending an area to exchange with LOW area. These were, by importance; occupancy (weighted 3); amount of suitable NRF habitat (weighted 2); critical habitat, connectivity of suitable habitat and lack of potential for adverse effects by possible adjacent development (each weighted 1).

Table B-1. Initial comparison of alternatives for spotted owls

Area	Occupancy (3)	Suitable habitat (2)	Critical habitat (1)	NRF Connectivity (1)	Potential development (1)	Final weight
Alt 1, Cold Springs	3	2	1	1	1	8
Alt 2, Burton Butte	3	2	1	0	0	6
Alt 3, Little Aspen	0	2	0	1	1	4

An updated comparison was done for this analysis. Much of this information is in the document, but Table B-2 attempts to summarize it.

Table B-2. Comparison of Alternatives

Factor	No Action	Alt 1	Alt 2	Alt 3
Occupancy/productivity	na	low	Better*	Better historically
Acres NRF	Non-functional	1,083	1,137	1,313
Critical habitat	na	OR-8	OR-37	na
LSR and admin withdrawn	R0227, non-funct	Adj to R0227 and Sky Lakes Wilderness	Not contiguous	Adj to R0228 and Mountain Lakes Wilderness
> 55% canopy cover	461 acres	1,651 acres	1,026 acres	1,107 acres
Stands ave dbh >21”	581 acres	2,262 acres	1,211 acres	1,729 acres
Potential for habitat loss in adjacent areas	Low, but area is non-functional	low	high	high
Connectivity (approach 1, contiguous)		high		Moderate but small size
Connectivity (approach 2, “stepping stone”			High, stepping stone to BLM core areas to south and Rogue NF to west	

* 2004 survey data shows that one of the nests has been taken over by barred owls (D. Laye, FWS Biologist, pers. comm.)

Past harvest

In the 1960’s there was broad selective harvesting and salvage. During the 1970’s the majority of harvest was second or third entries into previously harvested areas, along with harvest of large white fir and use the use of regeneration cuts. In the 1980’s there was the added use of small diameter white fir. By the 1990’s harvest shifted to the reduction of risk of fire, insects and disease.

Table B-3. Acres treated by decade

Decade	NA, LOW	Alt 1, Cold Springs	Alt 2, Burton Butte	Alt 3, Little Aspen
1960's	62	0	0	0
1970's	72	0	215	0
1980's	40	240	121	42
1990's	0	192	0	137
Young conifer present in 1990's	0	199	150	149

Spotted owl nest history/productivity

Nest sites are surveyed yearly through and agreement with Oregon State University Coop Unit. Surveys for new spotted owl territories were discontinued in 1994, and now just known nests are monitored.

Lake of the Woods

No known nests in the vicinity.

Cold Springs

Cold Springs trailhead nest (2752) was first noted as a pair site in 1991, but no nests were recorded. Males were recorded in 1994 and 1995 but no nesting was documented. The area wasn't monitored from 1996-2001. In 2002 a pair occupied the site and produced 2 young. In 2003, a pair was recorded there, but did not nest.

The Lost Peak nest (2764) was first reported as a pair site in 1991, and first nested in 1993. In 2003, a non-nesting pair was recorded in the area.

Burton Butte

Use in the Burton Butte nest area (2265) was first detected in 1985. The site had a pair there in 1990 and they first nested in 1991 and produced two fledglings. The site was used yearly through 2003, with young fledged in 1994, 1996, 1997, and 2001. The nearby BLM Pederson Springs nest area (2264) is known to have produced young in 2003, however one of the nest territories has been taken over by barred owls or by a mixed pair of spotted and barred owls. Surveys in 2004 located a single barred owl in Burton Butte (D. Laye, FWS Biologist, pers. comm.).

Little Aspen

Little Aspen Butte nest (1770) was first located and reported to have fledged young in 1977 and up until 1982. After this there were individuals or pairs reported in most years up until 1998. It was then unoccupied, in 1999 through 2002. A pair was recorded at the nest site in 2003, but reproductive status was unknown.

Table B-4. Spotted owl survey information (lacking details for Lost Peak and Pederson)

Territory	Year	Occupied by	Nested	Fledged
2752 Cold Springs	1991	pair	?	no
	1992	vacant	no	no
	1994	single	no	no
	1995	single	no	no
	2002	pair	yes	Yes, 2 young
	2003	pair	no	no
2764 Lost Peak	1991	pair	no	no
	1993	pair	yes	?
	2003	pair	no	no
2264 Pederson	2003	pair	yes	Yes, 2 young
2265 Burton Butte	1985	single	no	no
	1986	vacant	no	no
	1990	pair	no	no
	1991	pair	yes	Yes, 2 young
	1992	pair	?	?
	1993	pair	no	no
	1994	pair	yes	Yes, 2 young
	1995	pair	?	no
	1996	pair	yes	Yes, 1 young
	1997	pair	yes	Yes, 1 young
	1998	pair	?	no
	1999	pair	no	no
	2000	pair	Yes, failed	no
	2001	pair	yes	Yes, 1 young
	2002	pair	Yes, failed	no
	2003	single	no	no
1770 Little Aspen	1977	pair	yes	Yes, 1 young
	1978	pair	yes	Yes, 2 young
	1979	pair	yes	Yes, 1 young
	1980	pair	yes	Yes, 2 young
	1981	pair	yes	Yes, 1 young
	1982	pair	yes	Yes, 2 young
	1985	single	no	no
	1986	single	no	no
	1990	pair	?	?
	1991	pair	?	?
	1992	pair	?	?
	1993	single	no	no
	1994	vacant	no	no
	1995	pair	no	no
	1996	single	no	no
	1997	pair	?	no
	1998	single	no	no
	1999	vacant	no	no
	2000	vacant	no	no
	2001	vacant	no	no
	2002	vacant	no	no
	2003	pair	?	?

Spotted owl populations

The 1997 LSR Assessment stated that a total of 33 owl pairs plus 5 territorial singles were documented in LSR 0227 between 1987 and 1996. Since that time several activity centers have become unoccupied and the number of barred owls has gone up (D. Laye, FWS Biologist, pers. comm.).

Researchers have monitored the demography of spotted owls since 1985. One of the demography study areas, the Southern Oregon Cascades study area, overlaps the Klamath Ranger District of the Winema and includes portions of LSR 0227. In the Annual Research Report for the year 2000, the estimated annual rate of population change was "significantly less than one and was declining at a relatively greater rate than the trend previously estimated for the region". The author concludes that the population experienced a significant decline in the study area between 1991 and 1998 (from FWS 12/02).

Spotted owl numbers in Oregon have dropped by 2.8% per year from 1990 to 2003 (ESWR, May 2004). This analysis also suggests that reproductive and survival rates were relatively stable, but recruitment of young was not enough to offset the loss of owls due to various mortality factors.

The only LSR on the Winema that is large enough to support a "cluster" of spotted owls (LSR 0227) has had little habitat loss from timber activities. The smaller LSRs have not had any impacts that would change their condition since 1994. These LSRs are too small to support clusters and in several cases do not have the site potential to produce spotted owl habitat.